



## THYROID NODULES

### Repeat fine-needle aspiration biopsy should be considered for thyroid nodules with suspicious features on ultrasound, even when the initial results are benign

#### WHAT IS THE STUDY ABOUT?

Thyroid nodules are very common, occurring in up to 50% of patients. Thyroid nodules are concerning due to the possibility that they may contain a thyroid cancer. Overall, thyroid cancer is present in ~8% of thyroid nodules at the time of surgery. The initial evaluation of a thyroid nodule often includes a thyroid ultrasound followed by a thyroid fine needle aspiration biopsy (FNAB) to determine which nodules should be sent to surgery. While FNAB plays a key role in selecting patients for surgery, it has some limitations. Most concerning is the possibility of incorrectly labeling a nodule that contains a cancer as being cancer-free (benign). This study examined the value of ultrasound features in thyroid nodules that initially have a biopsy read as benign.

#### THE FULL ARTICLE TITLE:

Kwak et al. Value of US correlation of a thyroid nodule with initially benign cytologic results. *Radiology* 2010;254:292-300.

#### WHAT WAS THE AIM OF THE STUDY?

This study examined the value of ultrasound features in thyroid nodules that initially have a biopsy read as benign.

#### WHO WAS STUDIED?

From October 2003 through February 2006, a total of 6025 consecutive patients who were seen in Severance Hospital in Seoul, Korea, had US-guided FNAB of 6118 nodules, 3540 of which were  $\geq 1$  cm with benign results (58%). Of these, follow up information was available on 1343 nodules, with 202 of these nodules removed by surgery.

#### HOW WAS THE STUDY DONE?

The cytology, pathology and ultrasound reports were examined. Ultrasound features that were considered suspicious for cancer included any of the following: 1) very dark (hypoechoic), 2) small calcifications (microcalcifications), 3) irregular margins or 4) greater height than width.

#### WHAT WERE THE RESULTS OF THE STUDY?

The average age of the patients with nodules was 48.9 years. Of the 1343 nodules, 97 (7.2%) were surgically removed after the initial benign FNAB and 14 (14.4%) were found to be cancerous. A total of 149 nodules (12%) increased in size during the follow up period and had a second biopsy or surgery. Two of these nodules were found to be cancerous at surgery (1.3%). Another 19 nodules eventually went to surgery, 16 based on a second biopsy and 8 cancers were found in this group. In total, 24 cancers were found in nodules that were initially benign on FNAB (1.9%). Suspicious ultrasound features were found in 73% of the cancers and 5.6% of the benign nodules. However, 80% of the nodules with suspicious ultrasound features were indeed benign. If no suspicious ultrasound features were present, 100% of the nodules were benign. Further, if a second FNAB was also benign, 100% of the nodules were benign.

#### HOW DOES THIS COMPARE WITH OTHER STUDIES?

This and other studies show that FNAB is currently the best means of identifying thyroid cancer. In this study, 1.9% of the biopsies initially read as benign were eventually found to contain a cancer (false negative). In other studies, the false negative rate has ranged from 1 to 11%. Several studies have examined the predictive value of suspicious ultrasound features and one study found that the ultrasound changed the management of 63% of patients with palpable thyroid nodules. The current American Thyroid Association guidelines recommend that a nodule with a maximum diameter greater than 1.0 to 1.5 cm should be considered for biopsy unless they are simple cysts. In addition, these guidelines recommend that a nodule of any size with suspicious ultrasound features can be considered for FNAB.

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## **THYROID CANCER**, continued

### **WHAT ARE THE IMPLICATIONS OF THIS STUDY?**

This study suggests that an initial negative FNAB in a nodule with no concerning ultrasound features that remains stable in size is enough to confirm that the nodule is benign. However, if there are suspicious ultrasound features, the false negative rate of the initial FNAB may be as high as 20%. Because of this, nodules with suspicious

ultrasound features should undergo a repeat FNAB at some point.

— Alan Farwell, MD

### **ATA THYROID BROCHURE LINKS**

Thyroid Nodules: [http://thyroid.org/patients/patient\\_brochures/nodules.html](http://thyroid.org/patients/patient_brochures/nodules.html)

### **ABBREVIATIONS & DEFINITIONS**

**Thyroid nodule** — an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

**Thyroid Ultrasound** — a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and

characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

**Thyroid fine needle aspiration biopsy (FNAB)** — a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.